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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,859	07/09/2003	Yasuo Inoue	29284/598	8149

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EXAMINER

CHEN, ALAN S

ART UNIT PAPER NUMBER

2182

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/614,859	Applicant(s) INOUE, YASUO	
	Examiner Alan S. Chen	Art Unit 2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's amendment and arguments filed 11/17/2005 have been fully considered but they are not persuasive.
2. Applicant's arguments are summarized as follows: O'Brien allegedly does not teach a first processor controlling the transfer between cache unit and channel unit/upper-level system, the latter of which the cache gets the data from. O'Brien also allegedly does not teach a second processor controlling the transfer between the cache unit and a disk drive.
3. Examiner does not agree with applicant's arguments associated with the amendment and asserts O'Brien teaches the amended limitations of claim 1. The following rejection details O'Brien anticipating the amended claimed subject matter.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-14 rejected under 35 U.S.C. 102(e) as being anticipated by No. 5,247,638 to O'Brien et al. (hereafter O'Brien).
6. As per claims 1 and 15-18, O'Brien discloses a storage system comprising: a channel unit (Fig. 1, element 110-0 and Fig. 2, element 201-0) that transfers data sent from an upper-level system (Fig. 1, element 11) and transfers data to said upper-level system (see abstract), a cache

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unit (Fig. 1, element 113) which is connected to said channel unit (Fig. 2, element 113 is connected to element 110) and in which data sent from said channel unit is stored (Column 7, lines 46-65); a plurality of control units (Fig. 1, element 111 and 112) that is connected to said cache unit (Fig. 1, element 113), and transfers or receives data to or from said cache unit (Fig. 2); a disk device in which data sent from said plurality of control units is stored (Fig. 1, element 102-1), and a plurality of paths (Fig. 1, paths between element 111, 112 and element 113), one of said paths (one path between each control unit 111, 112 and cache, 113) connecting each control unit to said cache unit), wherein a number of said paths linking said plurality of control units and said cache unit are *at least equal to the number* of said plurality of control units (Fig. 1, two paths, one for each control unit, each path a dedicated path to corresponding cache unit; Fig. 2 gives more detail to the path structure. Clearly, the control unit 111, demonstrating one of two control units shown in Fig. 1, has a plurality of paths, shown in bold in Fig. 2, to the cache unit, element 113); O'Brien further discloses the storage system (Fig. 1) having one processor (Fig. 2, element 204-0; Column 9, lines 5-15 disclose "Within the storage path 200-0 is contained a processor 204-0 that *regulates the operation* of the storage path 200-0...", emphasis added) for controlling transfer to and from the cache unit of data and cache (Data sent from the host, element 11 and channel, element 110-0, is controlled for transfer to the cache, element 113, by this processor, element 204-0), and O'Brien discloses a second processor for controlling transfer to and from a disk drive of data stored in the cache unit (not expressly shown in the drawings, however, exists in the disk device 102-1; Column 8, lines 25-40 disclose "...a control processor associated with the disk drive has control responsibility for the entire disk drive and monitors all information routed over the various serial data channels that connect each disk drive...to control

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and drive circuits 121...” and received at and transferred from a controller (the controller here is the control and drive circuits shown in Fig. 1, element 121). Per claims 15-18, these claims are substantially covered by the scope of claim 1. Transfers to and from the cache unit is controlled by the processor, element 204-0. Data read out of the disk drives must go through the second processor, etc.

7. As per claim 2, O'Brien discloses claim 1, wherein said plurality of paths includes a first path (line between element 111 and 113) that links a first control unit (element 111) included in said plurality of control units (element 111 and 112) to said cache unit (element 113), and a second path (line between element 112 and 113) that links a second control unit (element 112) included in said plurality of control units to said cache unit (element 113).

8. As per claim 3, O'Brien discloses claim 2, wherein said first path and said second path are independent of each other (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

9. As per claim 4, O'Brien discloses claim 2, wherein said first path is dedicated to communication between said first control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

10. As per claim 5, O'Brien discloses claim 4, wherein said second path is dedicated to communication between said second control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

11. As per claim 6, O'Brien discloses claim 1, wherein among said plurality of paths, a path linking said cache unit (Fig. 1, element 113) and a predetermined control unit included in said plurality of control units is not the same as a path linking said cache unit and an other control unit included in said plurality of control units (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).
12. As per claims 7 and 9, O'Brien discloses claim 2, wherein said first path directly links said first control unit to said cache unit (Fig. 1, path between elements 111 and 113).
13. As per claims 8 and 10, O'Brien discloses claims 7 and 9, respectively, wherein said second path directly links said second control unit to said cache unit on a point-to-point basis, with no split/fan-out in the path (Fig. 1, path between elements 112 and 113).
14. As per claim 11, O'Brien discloses claim 1, wherein said disk device includes a plurality of disk drives (Fig. 1, element 122-125), and said plurality of control units is connected to said plurality of disk drives (Fig. 1, element 121, plurality of control circuits).
15. As per claim 12, O'Brien discloses claim 1, wherein said plurality of paths are signal lines linking said cache unit and said plurality of control units (inherently paths carry electrical signals, paths are address, data and control lines as shown in Fig. 2).
16. As per claim 13, O'Brien discloses claim 1, wherein said plurality of paths are used to write data (Fig. 2), of which writing is requested by said upper-level system, from said cache unit to said disk device, and used to communication data, of which writing is requested by said upper-level system, from said cache unit to said plurality of control units (Column 9, lines 33-39).
17. As per claim 14, O'Brien discloses claim 1, wherein said plurality of paths are used to read data (Fig. 2), of which reading is requested by said upper-level system, from said disk

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device, and are used to communicate data, of which reading is requested by said upper-level system, from said control unit to said cache unit (Column 9, lines 33-39).

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S. Chen whose telephone number is 571-272-4143. The examiner can normally be reached on M-F 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim N. Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASC
02/02/2006



KIM HUYNH
SUPERVISORY PATENT EXAMINER

2/2/06